HCPA East Contra Costa County Habitat Conservation Plan Association

HCPA Coordination Group Meeting

Thursday, August 15, 2002
1 p.m. to 3 p.m.

City of Pittsburg Council Chambers
65 Civic Drive in Pittsburg, 3rd Floor
(see map on reverse)

Draft Agenda

1:00 Introductions. Review contents of meeting packet.

1:05 Review and approve Draft Meeting Record of the July 18 Coordination Group meeting.

1:10 Consider draft memo on Application of Conservation Biology Principles to the East Contra Costa HCP (draft memo attached).

1:30 Continue to review analysis methods that will be used to prepare the HCP: 4 new habitat models for covered species (memo attached).

1:50 Biological Resources Inventory wrap-up (Chapter 3 of the HCP):

a) Geographic Information System (GIS) demo of landcover map and aerial photos
b) Revisit prior topics as needed
   - 1st meeting report from Science Advisory Pane
   - Jones and Stokes' recommendations for addressing these suggestions
     - Recommendation on "No-Take" Species
c) Develop any consensus comments on Chapter 3, the Science Panel Report and the Jones and Stokes response (initial habitat modeling may be taken into consideration, but we won't attempt to develop consensus comments on those at this meeting)
d) Any individual comments on the Biological Res. Inventory requested by August 31

2:35 Continue discussion on the topic of covered activities and consider removal of activities from the original all-encompassing list (memo attached)

2:55 Confirm upcoming meeting dates and review upcoming topics. Upcoming meetings are scheduled as follows for the City of Pittsburg Council Chambers (3rd Thursdays):

Thursday, September 19, 1 p.m. to 3 p.m.
Thursday, October 17, 1 p.m. to 3 p.m. (tentative)
(Science Advisory Panel tentatively scheduled to meet again at 1 on 9/20)

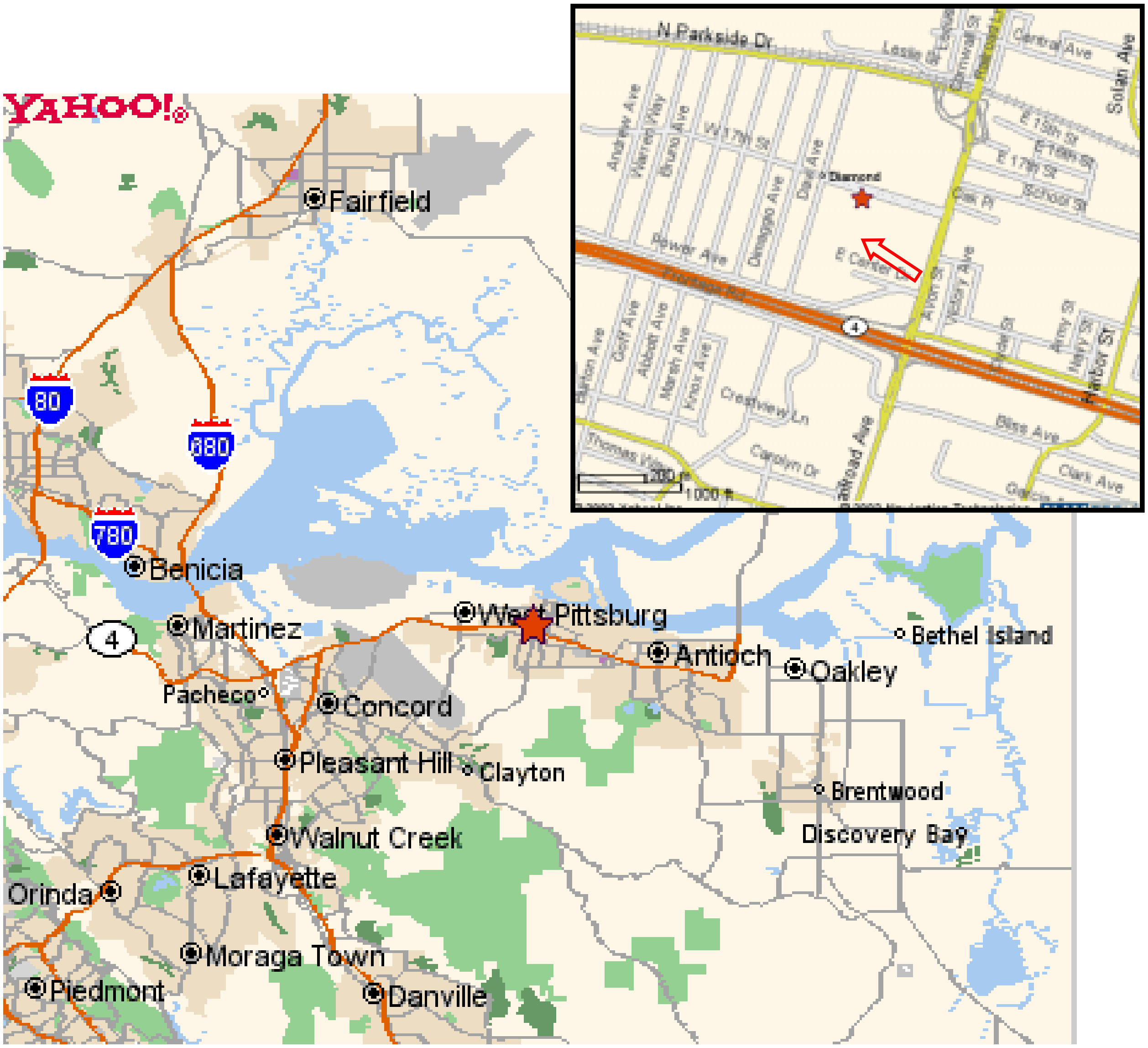
Upcoming topics include: initial work on economic analysis and development of alternative conservation strategies.

2:55 Public comment.

3:00 Adjourn.

Times are approximate. If you have questions about this agenda or desire additional meeting materials, you may contact John Kopchik of the Contra Costa County Community Development Department at 925-335-1227.

Map and Directions to Pittsburg City Hall
65 Civic Drive



Directions from I-680, Central County

1) Take Hwy 4 East toward Antioch/Stockton
2) Follow Hwy East over the hill (Willow Pass)
3) Exit Railroad Ave. (the 2nd exit after the hill)
4) At the end of the exit ramp, turn left on Railroad Ave.
5) Turn left at the second intersection, East Center Drive (signs for various city offices will also point you this way)
6) Immediately bear right into the large parking lot next to City Hall
7) Meeting is on the 3rd floor

Directions from Antioch and points east

1) Take Hwy 4 West toward Martinez/Richmond
2) Exit Railroad Ave.
3) At the end of the exit ramp, turn right on Railroad Ave.
4) Turn left at the next intersection, East Center Drive (signs for various city offices will also point you this way)
5) Immediately bear right into the large parking lot next to City Hall
6) Meeting is on the 3rd floor

DRAFT MEETING RECORD

East Contra Costa County Habitat Conservation Plan Association (HCPA) Coordination Group Meeting

Tuesday, July 18, 2002
1 p.m. to 3 p.m.

City of Pittsburg Council Chambers

1:00 **Welcome and introductions.** Meeting attendees introduced themselves. Coordination Group members in attendance were:

Mike Daley, Sierra Club Bay Chapter
John Slaymaker, Greenbelt Alliance
Carl Wilcox & Janice Gan, Dept of Fish & Game
John Kopchik, CCC Community Development
Sheila Larsen, U.S. Fish & Wildlife Service
Suzanne Marr, U.S. Env. Prot. Agncy.
Nancy Thomas, CCRCD
Jay Torres-Muga, A.D. Seeno
Fran Garland, CCWD
Mike Nepstad, U.S. Fish & Wildlife Service
Winston Rhodes, City of Brentwood
Mike Vukelich, CC Farm Bureau
Kerri Watt, Shea Homes
David Zippin, Jones & Stokes Assoc.
Jacqui Smalley, Golden Gate Audubon
Ann Dennis, Sierra Club
Brad Olson & Carey Knecht, EBRPD
Tom Bloomfield, RCD
Donna Vingo, CLLA
Randy Jerome, City of Pittsburg
Barry Hand, City of Oakley
Jacqui Smalley, Audubon

Others in attendance included: John Hopkins, Institute for Ecological Hlth, Lisa Hokholt, USDA/NRCS, and Ann Dennis, Sierra Club.

1:05 **Review and approve Draft Meeting Record of the June 18, 2002 Coordination Group meeting.** Meeting record was approved with the addition of Brad Olson, Randy Jerome, and David Zippin to the attendee list.

1:35 **Map-based vs. process-based HCPs: implications, advantages and disadvantages of alternative approaches (memo attached).** David Zippin explained the memo. John Kopchik indicated that it was premature to make a recommendation on this topic now, but that it would be a big decision and staff thought it would be helpful to start thinking about this now. Members expressed their preferences, some indicating that relying to some extent on a map was preferable because it would make the plan clearer while others indicated that maps could have unintended consequences and were undesirable for this reason.

1:50 **Discussion of the Draft Chapter 4 of the HCP: Land Use (distributed at June meeting)** Not discussed.

2:00 **Continued discussion of Biological Resources Inventory (Chapter 3 of the HCP), with consideration of the following additional items:**

- **1st meeting report from Science Advisory Panel (attached)**
- **Jones and Stokes' recommendations for addressing these suggestions**
    - **Recommendation on "No-Take" Species (memo attached)**
- **Report on augmentations to the species sightings database**

Discussion on the specifics of these topics was delayed to provide more time for review and to allow the group to be introduced the applications of the data (next item). August 31 was identified as the requested comment deadline for individual comments.

2:20 **Introduction to analysis methods that will be used to prepare the HCP: modeling habitat for covered species (memo attached).** David Zippin explained four prelimnary habitat models in detail. John Kopchik summarized the caveats associated with the maps in detail. The group discussed each model in turn.

2:55 **Confirm upcoming meeting dates and review upcoming topics. Upcoming meetings are scheduled as follows for the City of Pittsburg Council Chambers:**

Thursday, August 15, 1 p.m. to 3 p.m.
Thursday, September 19, 1 p.m. to 3 p.m. (tentative)

2:55 **Public comment.** None.

3:00 **Adjourn.**

Jones & Stokes

Memorandum

Date: August 8, 2002

To: East Contra Costa County HCPA c/o John Kopchik

cc:

From: David Zippin, Jones & Stokes

Subject: **Application of Conservation Biology Principles to the ECCC HCP/NCCP**

Introduction

A fundamental component of the conservation strategy for the East Contra Costa County (ECCC) HCP/NCCP is a preserve system composed of land purchased through fee title or conservation easements. This land will then be managed for the benefit of the covered species and natural communities in the HCP/NCCP, as well as for overall biodiversity, ecosystem functions, and any other complimentary goals identified in the planning process such as recreation, grazing, or agriculture. In order to maximize the benefits to these resources and uses with limited funds, the protected areas must be selected carefully. Selection will be based on a variety of biological, economic, and other factors. A partial list of these factors is presented at the end of this memo for context (these factors will be discussed at a later meeting).

This memorandum summarizes how principles of conservation biology will be applied to the ECCC HCP/NCCP to guide the creation of a high-quality preserve system.

Background and Purpose

One of the primary benefits of a regional HCP or an NCCP (by definition, NCCPs are regional) over a project-by-project approach is the ability to assemble multiple parcels of preserved land into a preserve system. If designed properly, this preserve system can function in a manner greater than the sum of its parts (individual preserves). Proper design of a preserve system depends on proper application of the scientific principles of conservation biology. In addition, to be successful a preserve system must be designed considering multiple spatial scales. For example, at a small scale, a preserve system must contain the microhabitats necessary for target species (e.g., covered species) to survive. At a medium scale, habitat patches must be large enough to support populations or important portions of populations of covered species and seasonal movement of species (e.g., aquatic habitat for winter breeding of amphibians and upland habitat for summer aestivation (hibernation)). At a larger scale, preserves must be linked to allow movement of wide-ranging species, for genetic exchange, and for recolonization

2841 Junction Avenue, Suite 114 • San Jose, CA 95134-2122 • tel. 408 434.2244 • fax 408 434.2240
www.jonesandstokes.com

following a local extinction. At the largest scale (landscape or regional scale), preserves must be able to support ecological functions (e.g., watershed functions) within a matrix of urban development, agricultural land, and other land use features. Small- and medium-scale considerations will be driven by the needs of covered species and natural communities. Larger-scale issues will be guided by the conservation principles for reserve design, large-scale ecological functions, and wide-ranging covered species.

Principles of Conservation Biology

We propose the following principles of conservation biology be used to guide the design and assembly of the preserve system for the ECCC HCP/NCCP. These principles are taken from major texts on conservation biology (Soule and Wilcox 1980; Soule 1986; Primack 1993; Meffe and Carroll 1997; Noss et al. 1997). They also incorporate important regulatory requirements that will affect the preserve design of this HCP/NCCP.

The principles of conservation biology on which the preserve system will be based will include but not be limited to the following.

- **Maximize Size.** The preserve system should be as large as possible within funding and management limits and within reasonable proportion to the project impacts. A large preserve system is important to ensure viable populations or portion of populations of covered species, to maximize protection of species sensitive to disturbances from adjacent land use, and to maximize the protection of biodiversity. Large preserves tend to support more species for longer periods of time than small preserves.

- **Minimize the Number of Preserve Units.** The preserve system should have as few units (individual preserve “islands” separated by non-preserve land) as possible to reduce management costs and increase habitat integrity and connectivity. A single large preserve is generally better than several small preserves of equal area at maintaining viable populations of species. In some cases, however, small preserves are necessary to protection isolated occurrences of local areas of high biological importance (e.g., covered plant species populations, unique or especially diverse land cover types such as alkali wetlands and serpentine grassland/scrub).

- **Link Preserves.** The system should link existing and proposed preserves to maximize the ability of organisms to move between preserves; ensure the exchange of genetic material, species migrations, dispersal, colonization; and increase the integrity of the network of preserve systems (e.g., reduces preserve edge with adjacent land uses).

- **Include Urban Buffer.** The system should include undeveloped lands at the urban edge to ensure a fixed and adequate buffer between urban development and natural communities.

- **Minimize Edge.** The preserve system should have the minimum amount of edge with non-preserve land, especially urban development (i.e., maximize the preserve area-perimeter ratio) to minimize the indirect effects of adjacent land uses on the preserve resources and to minimize management costs. For example, preserves should be more round or square in shape rather than long and narrow to minimize edge.

- **Maximize Environmental Gradients.** The preserve system should include a range of environmental gradients (e.g., topography, soil types, slopes, and aspects) to allow for shifting species distributions in response to catastrophic events (e.g., fire, prolonged drought) or anthropogenic change such as global warming.

- **Consider Watersheds.** The preserve system should include, when possible, entire watersheds, subwatersheds, or headwater streams not already in public ownership in order to maintain ecosystem function and aquatic habitat diversity.

- **Consider Full Ecological Range of Communities.** The preserve system should include the full ecological range of natural communities in the inventory area in order to maintain sufficient habitat diversity, species and population interactions, and natural disturbance regimes such as fire.

I encourage the HCPA and the Science Advisory Panel to suggest alternative conservation biology principles on which to the base the preserve design.

Other Factors

As stated above, the final preserve design will be based on a variety of biological, economic, and other factors in selecting lands to purchase in fee title or through conservation easements. Below is a partial list of these factors to provide context for the principles of conservation biology. We will discuss these other factors in more detail later in the process. Sites will be chosen based on, in part:

- the ability of the site and its resources to adequately mitigate for cumulative project impacts (i.e., impacts of multiple projects covered by the HCP/NCCP);
- land or easement cost and value;
- seller willingness to include land in preserve system;
- whether compatible uses such as recreation, grazing, or agriculture occur on the site (these uses will be encouraged, when compatible). Other uses such as wind farms may be compatible with the preserve system;
- whether the site supports covered species or can support these species (based on the species distribution models, records of species locations, and knowledge of the habitat quality of the area), and
- whether the site supports covered natural communities (based on the land-cover

mapping).

Literature Cited

Meffe, G. K., and C. R. Carroll. 1997. Principles of Conservation Biology, 2nd edition. Sinauer Associates, Sunderland, MA.

Noss, R. F., M. A. O'Connell, and D. D. Murphy. 1997. The Science of Conservation Planning: Habitat Conservation Planning Under the Endangered Species Act. Island Press, Covelo, CA.

Primack, R. B. 1993. Essentials of Conservation Biology. Sinauer Associates, Sunderland, MA.

Soule, M. E., ed. 1986. Conservation Biology: The Science of Scarcity and Diversity. Sinauer Associates, Sunderland, MA.

Soule, M. E., and B. A. Wilcox, eds. 1980. Conservation Biology: An Evolutionary-Ecological Perspective. Sinauer Associates, Sunderland, MA.

Jones & Stokes

Memorandum

Date: August 9, 2002

To: East Contra Costa County HCP Stakeholders Group

cc:

From: Ed West and David Zippin, Jones & Stokes

Subject: **ECCC HCP/NCCP Covered Species Distribution Models**

This memorandum presents preliminary results for the second set of four covered species distribution models for the ECCC HCP/NCCP. This memo also presents refinements made to the models presented in a July 10 memo for the Alameda whipsnake, western burrowing owl, Swainson's hawk and California red-legged frog. The background, purpose, model structure and development methodology for all covered species models was presented in the previous memo.

Models for the San Joaquin kit fox, California tiger salamander, giant garter snake and recurved larkspur are presented here. Each model is based on a set of assumptions that define the mapping parameters used to identify the land cover areas important to each species. Rationales for the assumptions are also provided. The model results are presented in Figures 1-4 and described below.

San Joaquin Kit Fox

Model Assumptions:

1. The following land cover types were considered core habitat for the San Joaquin kit fox:
   - Annual grassland suitable for all kit fox activities including foraging, denning, shelter and movement corridors that is connected to known kit fox movement routes;
   - Oak savanna contiguous with annual grassland;
   - Alkali grassland within annual grassland or connected to annual grassland by agricultural lands;
   - Seasonal wetland within annual grassland or oak savanna;
   - Ruderal areas within annual grassland or oak savanna or contiguous with adjacent annual grassland;
   - All wind turbine areas within annual grassland
2. Cropland and pasture land cover types within 1 mile of core habitat as defined above was considered low use habitat in which kit foxes may occur when the land is fallow or along the periphery of cultivated fields along levees and in ruderal land cover.

2841 Junction Avenue, Suite 114 • San Jose, CA 95134-2122 • tel. 408 434.2244 • fax 408 434.2240
www.jonesandstokes.com

3. Grassland and oak savanna patches isolated from large contiguous tracts of annual grassland by oak woodland or chapparal/scrub were considered non-habitat.

Rationale

Core Habitat: In the northern part of its range (including Contra Costa County), where most habitat on the valley floor has been eliminated, kit foxes now occur primarily in foothill grasslands (Swick 1973, Hall 1983, Williams et al. 1998), valley oak savanna and alkali grasslands (Bell 1994). They prefer habitats with loose-textured soils (Grinnell et al 1937, Hall 1946, Egoscue 1962, Morrell 1972), suitable for digging, but occur on virtually every soil type. Dens are generally located in open areas with grass or grass and scattered brush, and seldom occur in areas with thick brush (Morrell 1972). Preferred sites are relatively flat, well-drained terrain (Williams et al. 1998, Roderick and Mathews 1999). They are seldom found in areas with shallow soils due to high water tables (McCue et al. 1981) or impenetrable bedrock or hardpan layers (Morrell 1975, O'Farrell and Gilbertson 1979, O'Farrell et al. 1980). However, kit foxes may occupy soils with a high clay content where they can modify burrows dug by other animals such as ground squirrels (*Spermophilus beeychii)* (Orloff et al. 1986).

Small patches of higher-elevation annual grassland and oak savanna in the eastern portions of the study area were considered unsuitable when separated from the large areas of contiguous habitat to the west by large tracts of oak woodland. While kit foxes may occasionally use oak woodland habitat, at least along the margins adjacent to core grassland habitat (Orloff, pers. com.), they are not likely to frequently pass through these areas due to higher predation potential from other canids (coyotes, gray foxes, red foxes) and reduced prey availability. Isolated patches of grassland and oak savanna beyond these oak woodland tracts were therefore considered not suitable habitat for this species.

Low Use Habitat: San Joaquin kit foxes also less frequently occur adjacent to and forage in tilled and fallow fields and irrigated row crops (Bell 1994). These foxes will den within small parcels of native habitat that is surrounded by intensively maintained agricultural lands (Knapp 1978) and adjacent to dryland farms (Jensen 1972, Orloff et al. 1986, Williams et al. 1998). Kit foxes are known to use agricultural areas within the inventory area in these ways.

Results:

Figure 1 shows the modeled potential habitat of the San Joaquin kit fox within the ECCC HCP/NCCP inventory area. The habitat includes approximately two-thirds of the inventory area and is primarily located within the low elevation grassland areas between the agricultural/urban areas in the east and north and the higher elevation foothill areas around Mt. Diablo to the west. The documented occurrences of San Joaquin kit foxes in this area correspond well to locations within the modeled core area habitat.

California Tiger Salamander

Model Assumptions:

1. All ponds, wetlands, seasonal wetlands, and alkali wetlands within annual grassland, oak savanna, and oak woodland were considered potential breeding habitat for California tiger salamander.
2. All non-urban, non-aquatic land cover types within 1 mile of potential breeding sites were considered potential migration and aestivation habitat for this species.

Rationale:

California tiger salamanders require 2 major habitat components: aquatic breeding sites and terrestrial aestivation or refuge sites. California tiger salamanders inhabit valley and foothill grasslands and the grassy understory of open woodlands, usually within 1 mile of water (Jennings and Hayes 1994). The California tiger salamander is terrestrial as an adult and spends most of its time underground in subterranean refugia. Underground retreats usually consist of ground-squirrel burrows and occasionally human-made structures. Adults emerge from underground to breed, but only for brief periods during the year. Tiger salamanders breed and lay their eggs primarily in vernal pools and other ephemeral ponds that fill in winter and often dry out by summer (Loredo et al. 1996); they sometimes use permanent human-made ponds (e.g., stock ponds), reservoirs, and small lakes that do not support predatory fish or bullfrogs (see “Ecological Relationships” discussion below) (Stebbins 1972, Zeiner et al. 1988). Streams are rarely used for reproduction.

Adult salamanders migrate from upland habitats to aquatic breeding sites during the first major rainfall events of fall and early winter and return to upland habitats after breeding. This species requires small-mammal (e.g., California ground squirrel) burrows for cover during the non-breeding season and during migration to and from aquatic breeding sites (Zeiner et al. 1988). California tiger salamanders also use logs, piles of lumber, and shrink-swell cracks in the ground for cover (Holland et al. 1990) California tiger salamanders can overwinter in burrows up to 1 mile from their breeding sites (Jennings and Hayes 1994).

The proximity of refuge sites to aquatic breeding sites also affects the suitability of salamander habitat. Although the variation in distances between breeding and refuge sites is poorly studied (Jennings and Hayes 1994) juvenile salamanders are known to migrate distances up to 1 mile (1.6 km) from breeding sites (Austin and Shaffer 1992, Mullen *in* U.S. Fish and Wildlife Service 2000. Research has shown that dispersing juveniles can roam up to 1 mile from their breeding ponds.

Results:

Figure 2 shows the modeled potential habitat of the California tiger salamander. The habitat includes approximately two-thirds of the inventory area and is largely located in the hilly portions of the western side of this area. All documented occurrences of this species fit well within the boundaries of the model.

The large proportion of the modeled habitat within non-urban areas is due to the large number of ponds that provide potential breeding habitat and the potential dispersal distance of this species. Loredo et al. (1996) found that tiger salamanders may use burrows that are first encountered during movements from breeding to upland sites. In their study area, where the density of California ground squirrel burrows was high, the average migration distances between breeding and refuge sites for adults and juveniles was 118 feet (35.9 m) and 85 feet (26.0 m), respectively. Therefore, although salamanders may migrate up to 1 mile, migration distances are likely to be less in areas supporting refugia closer to breeding sites. However, because the actual movement patterns of the salamanders away from breeding sites is not known within the inventory area, we used a conservative estimate of 1 mile to define the potential movement/dispersal habitat requirements for this species. Also, due to the 10 acre minimum resolution function of the model, vernal pools and seasonal wetlands could not be delineated within the modeled distribution area and their abundance is likely to have been underestimated.

Giant Garter Snake

Model Assumptions:

1. The slough/channel, pond, and stream land-cover type within or adjacent to pasture and cropland were considered core habitat for the giant garter snake.
2. The ruderal land cover type associated with pasture and cropland within 900 feet of sloughs and irrigation channels were considered potential movement and foraging habitat for the giant garter snake.

Rationale:

Core Habitat: The giant garter snake inhabits agricultural wetlands and associated waterways, including sloughs, irrigation and drainage canals, ponds, low-gradient streams, and adjacent uplands (U.S. Fish and Wildlife Service 1999).

Movement Habitat: During the active season, giant garter snakes generally remain in close proximity to wetland habitats but can move over 800 feet from the water during the day (G. Hansen 1988, Wylie et al. 1997). Because the actual movement patterns of garter snakes are not known, we used a conservative estimate of 900 feet to define the potential movement habitat requirements for this species.

Results:

Figure 3 shows the modeled potential habitat of the giant garter snake within the inventory area. No occurrence records for this species were found within the inventory area. The only known records in the vicinity of the inventory area are to the north in the Sacramento/San Joaquin Delta. However, few surveys have been conducted for this species within the inventory area, but suitable habitat is known to occur there. The habitat is largely restricted to the sloughs and surrounding agricultural areas in the northeast and eastern portions of the inventory area.

Recurved Larkspur

Model Assumptions:

1. All alkali grassland within the inventory area was considered suitable habitat for recurved larkspur.

Rationale:

Recurved larkspur occurs on sandy or clay alkaline soils, generally in annual grasslands or in association with saltbush scrub or valley sink scrub habitats, ranging in elevation from 100 to 2,000 feet above sea level (California Natural Diversity Data Base 2001).

Results:

Figure 4 shows the modeled potential habitat of the recurved larkspur within the inventory area. The habitat is restricted to the alkali grassland in the southeast portion of the area. Three of the four known occurrences fit well within the boundaries of the model. The record outside the model occurs in a patch of alkali grassland that was below the 10-acre minimum resolution of the land cover mapping (R. Preston, pers. comm.)

Revisions to Earlier Covered Species Models

Alameda Whipsnake

Following discussion of this model at the Coordination Group meeting in July, we discussed this model in depth with biologists from the California Department of Fish and Game (DFG). After closely examining the aerial photos at many locations in the inventory area, we determined that there were no small patches of chaparral (i.e., below the minimum mapping unit) at the edges of the model that could affect it substantially. We also examined the two "outlier" points of Alameda whipsnake east and north of Los Vaqueros Dam. These points occurred in an almost featureless annual grassland. Nothing was visible on the aerial photographs that could explain these points. The California Department of Fish and Game may attempt to trap Alameda whipsnake at these two locations to verify these points and to refine our understanding of whipsnake habitat. The model for the Alameda whipsnake is considered complete for now.

California Red-legged Frog

The migration/aestivation buffer habitat (i.e., buffer zone) was refined to correct problems with ponds and streams in urban areas. Biologists from DFG and the U.S. Fish and Wildlife Service have agreed to verify the suitability of 3 potential breeding ponds in urban areas (1 in Antioch, 2 in Brentwood). If these ponds are determined to be unsuitable, the model will be modified.

Western Burrowing Owl

Following the most recent Coordination Group meeting, and in conjunction Fish and Game staff, we examined areas of intensive agriculture in aerial photos to look for patches of ruderal and grassland land cover types below our minimum mapping unit (10 acres). We found these consistently, indicating the Western burrowing owl could occur as isolated individuals or in small groups throughout cropland and pasture in the inventory area. In addition, we felt that burrowing owls could also use areas mapped as cropland and pasture in the future if sites are left fallow. To address these model limitations, cropland and pasture land cover types has been added as low use habitat for the western burrowing owl.

Swainson's Hawk

The model for the Swainson's hawk is considered complete for now. Additional occurrence records from the Contra Costa Breeding Bird Atlas will be added to the model. These records are located in the northeast corner of the inventory area, well within the modeled habitat.

Literature Cited

Barry, S. J., and H. B. Shaffer. 1994. The status of the California Tiger Salamander (*Ambystoma californiense*) at Lagunita: a 50-year update. Journal of Herpetology 28:159–164.

Bell, H. 1994. Analysis of habitat characteristics of San Joaquin kit fox in its northern range. Master's Thesis, California State University, Hayward.

Brode, J. and G. Hansen. 1992. Status and future management of the giant garter snake (*Thamnophis gigas*) within the southern American Basin, Sacramento and Sutter counties, California. California Department of Fish and Game, Inland Fisheries Division.

Brode, J. 1988. Natural history of the giant garter snake (*Thamnophis couchi gigas*). Pages 25–28, *in* Proceedings of the conference on California herpetology, H.F. DeListe, P. R. Brown, B. Kaufman, and B. M. McGurty (eds). Southwestern Herpetologists Society, Special Publication No. 4.

California Natural Diversity Database. 2001. RareFind 2, Version 2.1.2 (September 5, 2001 update). California Department of Fish and Game, Sacramento, CA.

Feaver, P. E. 1971. Breeding pool selection and larval mortality of three California amphibians: *Ambystoma tigrinum californiense* Gray, Hyla regilla Baird and Girard, and Scaphiopus hammondii Girard. MA Thesis, Fresno State College, Fresno, CA.

Grinnell, J., J. S. Dixon, and J. M. Linsdale. 1937. Fur-bearing mammals of California. Univ. California Press, Berkeley. Vol. 2, xiv + 377-777.

Hall, Jr., F. A. 1983. Status of the San Joaquin kit fox, *Vulpes macrotis mutica,* at the Bethany Wind Turbine Generating Project site, Alameda County, California. California Department of Fish and Game. 36pp.

Hansen, G. E. 1988. Review of the status of the giant garter snake (*Thamnophis couchi gigas*) and its supporting habitat during 1986–1987. Final report for California Department of Fish and Game, Contract C-2060. Unpublished. 31 pp.

Hansen, G. E. and J. M. Brode. 1993. Results of relocating canal habitat of the giant garter snake (*Thamnophis gigas*) during widening of State Route 99/70 in Sacramento and Sutter counties, California. Final report for Caltrans Interagency Agreement 03E325 (FG7550)(FY87/88-91-92). Unpublished. 36 pp.

Holland, D. C., M. P. Hayes, and E. McMillan. 1990. Late summer movement and mass mortality in the California tiger salamander (*Ambystoma californiense*). Southwestern Naturalist

35:217–220.

Jennings, M. R., and M. P. Hayes. 1994. Amphibian and reptile species of special concern in California. Final Report to the California Department of Fish and Game, Inland Fisheries Division, Rancho Cordova, CA. 225 pp.

Jensen, C. C. 1972. San Joaquin kit fox distribution. Bureau of Sport Fish and Wildlife, Div. Wildlife Serv., Sacramento, Ca. 22 pp.

Knapp, D. K. 1978. Effects of agricultural development in Kern County, California, on the San Joaquin kit fox in 1977. Final Report, Project E-1-1, Job V-1.21, Non-Game Wildlife Investigations, California Department of Fish and Game, Sacramento, California.

Loredo, I., D. Van Vuren, and M. L. Morrison. 1996. Habitat use and migration behavior of the California tiger salamander. Journal of Herpetology 30:282–285.

McCue, P., T. Kato, M. L. Sauls, T. P. O'Farrell. 1981. Inventory of San Joaquin kit fox on land proposed as Phase II, Kesterson Reservoir, Merced County, California. Topical Report EGG 1183-2426, EG&G, Santa Barbara Operations, U.S. Department of Energy, Goleta, California.

Morrell, S. 1972. Life history of the San Joaquin kit fox. California Fish and Game 58:162-174.

O'Farrell, T. P., T. Kato, P. McCue, and M. S. Sauls. 1980. Inventory of the San Joaquin kit fox on BLM lands in southern and southwestern San Joaquin Valley. Final Report, ECC 1183-2400, EG&C, Santa Barbara Operations, U.S. Department of Energy, Goleta, California.

O'Farrell, T. P. and L. Gilbertson 1979. Ecological life history of the desert kit fox in the Mojave desert of southern California. Final Report. U.s. Bureau of Land Management, Desert Plan Staff, Riverside, California.

Orloff, S., F. Hall, and L. Spiegel. 1986. Distribution and habitat requirements of the San Joaquin kit fox in the norther extreme of their range. Trans. West. Sect. Wildl. Soc. 22: 60-70.

Roderick, P. J. and N. E. Mathews. 1999. Characteristics of natal and non-natal kit fox dens in the northern Chihuahuan Desert. Great Basin Naturalist 59(3):252-258.

Rossman, D. and G. Stewart. 1987. Taxonomic reevaluation of *Thamnophis couchi* (*Serpentes:Colubridae*). Occasional Papers of the Museum of Zoology, Louisiana State University, Baton Rouge, Louisiana. No. 63. 25 pp.

Shaffer, H. B., R. N. Fisher, and S. E. Stanley. 1993. Status report: The California tiger salamander (*Ambystoma californiense*). Final report to the California Department of Fish and

Game, Inland Fisheries Division, Rancho Cordova, California, under Contracts (FG 9422 and FG 1383).

Stebbins, R. C. 1972. California amphibians and reptiles. Univ. California Press, Berkeley. 152 pp.

Swick, C. D. 1973. Determination of San Joaquin kit fox in Contra Costa, Alameda, San Joaquin, and Tulare Counties. Special Wildlife Investigations Program Report W-54-R4, California Department of Fish and Game, Sacramento, California. 14 pp.

U. S. Fish and Wildlife Service. 1999. Draft Recovery Plan for the giant garter snake (*Thamnopsis gigas*). U. S. Fish and Wildlife Service, Portland, Oregon. ix + 129 pp.

Williams, D. F., E. A. Cypher, P. A. Kelly, N. Norvell, C. D. Johnson, G. W. Colliver, and K. J. Miller. 1998. Draft Recovery Plan for Upland Species of the San Joaquin Valley, California. U. S. Fish and Wildlife Service, Portland Oregon 295 pp.

Wylie, G. D., M. Cassaza, and J. K. Daugherty. 1997. 1996 progress report for the giant garter snake study. Preliminary report, U.S. Geological Survey, Biological Resources Division.

Zeiner, D. C., W. F. Laudenslayer, Jr., and K. E. Meyer. 1988. California's wildlife. Volume I: amphibians and reptiles. May 2, 1988. California Department of Fish and Game. Sacramento, CA.

Jones & Stokes

Memorandum

Date: August 8, 2002

To: East Contra Costa County HCPA c/o John Kopchik

cc:

From: David Zippin, Jones & Stokes

Subject: **Covered Activities**

Jones & Stokes submitted a preliminary list of potential covered activities to the HCPA in a February 13 memorandum. This memo presents our recommendations of changes to the original list (Table 1) based on discussions with staff, the HCPA Coordination Group, and the Executive Governing Committee since February 13. Our recommendations include deletions, one addition, and several consolidations of the original 18 activities to a new list of from 9 to 12 activities (see summary list at the end of the memo).

Table 1. Recommended Changes Regarding the 18 Covered Activities Under Consideration by the HCPA.

Proposed Activity from Feb. 13 list	Recommendation	Remaining Questions
1. Residential, commercial, and industrial development	Retain as core covered activity.	How much residential development is to be covered and where?
2. Road construction and maintenance	Refine activity to "road and highway construction and maintenance". Estimate final impacts based on combination of on-going and future maintenance, and new construction from foreseeable major projects.	What is the length of roads outside the ULL on which regular maintenance is conducted? Are major new highways, roads or highway/road expansions planned outside the ULL?
3. Water infrastructure projects	Refine activity to "water infrastructure construction and maintenance". Estimate impacts based on combination of on-going and future maintenance, and new construction from foreseeable major projects.	Where are major water infrastructure projects planned, besides the Los Vaqueros Reservoir expansion (excluded from HCP/NCCP)?
4. Flood control project construction and maintenance	Retain activity. Estimate final impacts based on combination of on-going and future maintenance, and new construction from foreseeable major projects.	Where are major flood control projects planned?
5. Wind energy development	Drop from consideration as a covered activity due to the lack of foreseeable	None

Proposed Activity from Feb. 13 list	Recommendation	Remaining Questions
	projects and the unique nature of their impact on raptors.	
6. Sanitary system infrastructure	Refine activity to "sanitary system infrastructure construction and maintenance". Estimate final impacts based on combination of on-going, small-scale activities and new construction of foreseeable major projects.	Where are major wastewater projects planned?
7. Recreational facility construction, maintenance, and operation	Refine activity to "rural recreational facility…" (recreational facilities within the Urban Limit Line (ULL) can be subsumed within #1). Estimate impacts based on combination of on-going and future operation and maintenance activities, and construction of new facilities needed for the HCP/NCCP preserve system.	Does EBRPD need coverage under the HCP/NCCP for construction, maintenance, and operation of their existing or new facilities?
8. Mining facility construction, operation, and maintenance	Due to the limited mining occurring in the inventory area, drop this activity unless Unamin in interested in coverage under the HCP/NCCP.	Is Unamin interested in getting their operations or future expansions covered under the HCP/NCCP?
9. Creation of parks, trails, and campgrounds	Include these activities within the ULL in activity #1; include these activities outside the ULL in activity #7. Create new category "recreational use of rural parks and preserves" to cover recreational uses within HCP/NCCP preserve system.	Does EBRPD want to include existing recreational uses in their parks in the HCP/NCCP?
10. Funeral/ Interment Services	Include these activities within the ULL in activity #1. Create new activity "miscellaneous development outside the ULL". Estimate final impacts based on rough acreage ceiling.	None
11. Public Services (e.g., construction of fire stations, police stations, public administration centers, community centers, schools, airports (or airport expansion))	Include these activities within the ULL in activity #1; include these activities outside the ULL in revised activity #10; estimate activities outside the ULL based on rough ceiling	The Byron Airport is within the ULL; should we include development on current GP designations in the final analysis or another development footprint? Is there a formal proposal to expand the Byron Airport?
12. Construction of Churches	Include this activity within the ULL in activity #1. Include this activity outside the ULL in revised activity #10. Estimate activity outside the ULL based on rough ceiling.	None

Proposed Activity from Feb. 13 list	Recommendation	Remaining Questions
13. Utility services- electricity, solids, liquids or gas through pipes which are necessary to support principal development involving only minor structures	Include this activity within the ULL in activity #1. Include this activity outside the ULL in revised activity #10. Estimate activity outside the ULL based on rough ceiling.	None
14. Population surveys, management, and scientific research on Preserve lands or potential preserve lands	Refine this activity to include habitat restoration in preserves created by the HCP/NCCP.	None
15. Relocation of covered species or other mitigation required for direct impacts to covered species	Retain this activity but combine with #14.	None
16. New agricultural operations	Combine with #17 and redefine as "clearing, grading, or filling of grasslands, oak woodlands, chaparral, wetlands, or riparian woodland/scrub natural communities for new irrigated agriculture". Define new irrigated agriculture as "cropland, pasture, orchards, or vineyards that currently do not support these activities".	Does the agricultural community want this activity covered in the HCP/NCCP? How much is irrigated agriculture expected to expand into these natural communities during the permit term?
17. Agricultural intensification	Combine with #16; see above	None
18. On-going operations of existing agriculture	Drop activity unless agricultural community is interested in covered it in the HCP/NCCP. Define terms clearly with help of landowner representatives and based on new California Endangered Species Act revisions to agricultural exemption provision. Estimate impacts based on ceiling within current agriculture and grassland land cover types.	Does the agricultural community want this activity covered? If so, how much coverage is needed and for which on-going activities?

In summary, this new draft list of activities incorporates all of our recommendations:

1. Residential, commercial, and industrial development
2. Road and highway construction and maintenance
3. Water infrastructure construction and maintenance
4. Flood control project construction and maintenance
5. Sanitary system infrastructure construction and maintenance
6. Rural recreational facility construction, maintenance, and operation
7. Recreational use of rural parks and preserves
8. Mining facility construction, operation, and maintenance (if requested by mining companies)
9. Miscellaneous development outside the ULL (to be defined later)
10. Population surveys, species relocation, habitat restoration, management, and scientific research on preserve lands or potential preserve lands
11. Clearing, grading, or filling of natural communities for new irrigated agriculture (if requested by agricultural community)
12. On-going operations of existing agriculture (if requested by agricultural community)